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seminar

Wednesday, 21St July, 9.30am, **SEMINAR ROOM**

Host: Dr. Silvia Collavini

Synthesis, radiolabeling and preclinical evaluation of multi-functionalized nanosystems for boron neutron capture therapy (BNCT)

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Boron neutron capture therapy (BNCT) is a promising binary radiotherapeutic treatment based on the neutron capture and subsequent fission reaction of boron-10. The recent emergence of nanotechnologies has opened new avenues for the development of nanomaterial-based boron carriers. Nanomaterials have the advantage that, when appropriately designed, have a long circulating half-life, and preferentially accumulate in cancer tissues due to the enhanced permeability and retention (EPR) effect. In this talk, I will discuss our group's effort in developing: (i) gold-based, water-soluble, biocompatible and shape and size-tuned nanosystems, stabilized with polyethylene glycol and functionalized with the boron-rich anion cobalt bis(dicarbollide) (COSAN); and (ii) Boron rich carbon dots functionalized with polyethylene glycol, for BNCT applications. These multi-functionalized nanosystems were radiolabeled with positron emitters and their pharmacokinetic properties were evaluated in vivo using positron emission tomography (PET), in order to assess their potential as drug candidates in different tumor models. I will discuss how size, shape, and type of the nanosystems showed effect on the biodistribution and tumor accumulation. I will also discuss recent developments happened in BNCT research during my talk.